DOCUMENT RESUME

ED 431 798 TM 029 884

AUTHOR Costello, Ronald W.
TITLE Using Standardized Testing Results To Establish Standards for the Improvement of Student Academic Performance in Indiana.
PUB DATE 1999-05-15
NOTE 10p.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Academic Standards; Achievement Tests; Comparative Analysis; Educational Improvement; Elementary Secondary Education; Performance Factors; *Standardized Tests; *Test Results; Test Use
IDENTIFIERS *Indiana

ABSTRACT

The annual student performance information released in Indiana reports information on many different criteria and treats the data as if all comparisons should be the same. However, Indiana needs to set performance expectations that require all, not just some, students to improve. The Indiana Statewide Test of Educational Proficiencies Plus (ISTEP+) is the testing program mandated by Indiana for grades 3, 6, 8, and 10. Presently data from the ISTEP+ and other achievement tests are compared as if it were important to compare how students at one grade level do in relationship to other students in the same school, other schools, and other school districts. However, test results can be used to set standards for the improvement of all students by tracking and analyzing them over time and determining if there is a relationship between the ISTEP+ student proficiencies and other achievement test results, such as those from Terra Nova. A relationship can be established among ability testing, achievement testing, and essential skill testing for both the state test and other achievement tests (Terra Nova) using new test analysis software available commercially. Performance expectations can be set that assure that all students improve. (Contains three figures, three tables, and three references.) (SLD)

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# Using Standardized Testing Results to Establish Standards for the Improvement of Student Academic Performance in Indiana

by Ronald W. Costello

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Ronald W. Costello is Assistant Superintendent, Noblesville Schools, 1775 Field Drive, Noblesville, IN 46060. (Email: ron_costello@mail.nobl.k12.in.us)



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Each school year as Indiana educators prepare for the release of annual student performance information, we all cringe because we do not know how the information will be presented by the media or interpreted by the public. In Indiana, student performance on many different criteria is reported, and all the data is treated as if the comparisons should be the same. First, we must realize that it is unrealistic and unfair to treat data like attendance rate, graduation rate, and discipline statistics in the same way we treat achievement test scores.

Public interest in standardized performance data in Indiana has narrowed down to three general areas: (1) the percentage of students passing the Mathematics proficiencies on the statewide test; (2) the percentage of students passing the Language Arts proficiencies on the statewide test; and, (3) the national percentile score on the Total Test Battery in Language Arts, Reading, and Mathematics. There seems to be little understanding of or agreement on how this data can be used to improve the performance of all students. The goal of Indiana Association for Supervision and Curriculum Development (IASCD) in planning professional development activities in our state has been to focus on how to improve learning for all students.

At the IASCD Annual Conference in the Fall of 1997, we held a panel discussion on **Communicating Student Learning**. The panel included two representatives from business, the education liaison from the Governor's office, the State Superintendent of Public Instruction, a representative from ASCD (the mediator), and Tom Guskey from the University of Kentucky. During the panel discussion, the three uses of standardized testing were identified. They were: (1) ranking of schools or students based upon their standardized test results; (2) adjusting performance expectations based upon some external factors such as variations in socio-economic status and ability level; and, (3) judging academic performance upon whether students are improving.

In summarizing how Kentucky used student standardized performance information, Dr. Guskey stated that Kentucky used the data to measure and document the improvement of all students. In order for this to happen, we must understand what the data tells us and change how we use the data to improve student performance. We need to use the data from an annual report to

determine how students change as they move from one grade to the next, and we need to set performance expectations that require all, not just some, students to improve.

**Annual Report versus Continuous Improvement**

The Indiana Statewide Test of Educational Proficiencies Plus (ISTEP+) is the testing program mandated by the Indiana State Department of Instruction for students in grades 3, 6, 8 and 10. Mandated testing in Indiana started in 1988. Since that time, the program has experienced many changes in focus and goals. Currently, ISTEP+ shows students' scores in relation to anticipated results and national percentiles in Language Arts, Reading, and Mathematics. In addition, over the years, Indiana has developed an Essential Skills component of the test to measure the proficiencies that are determined to be most important for students. This Essential Skills test has become a gateway exam, used to determine whether 10th grade students are meeting high school graduation proficiency standards and will graduate. Most school districts, ours included, test students in non-ISTEP+ years to gather additional standardized performance data. For this purpose, we use the CTB McGraw-Hill, ***Terra Nova*** , which is comparable to the norm reference part of the ISTEP+ test.

At the heart of the issue is the need to change our thinking about achievement test results and how we compare the data. Presently, the data is compared as if it is important to compare how students at a certain grade level do in relationship to other students within the same school, in other schools, and between other school districts on an annual basis. To determine school's qualifications to receive performance incentive money from the state of Indiana, test results from the same grade level are compared from one year to the next. The problem is that no consideration is given to different abilities and strengths that students bring to the testing situation from one year to the next. In addition, such a comparison does little or nothing to tell us whether students are improving as they progress through their schooling. Therefore, according to Guskey, this brings us back to the issue of why we need to change to an improvement model which expects all students to improve not just some, as we are currently doing now in Indiana. With the current scenario,

testing does not produce any expectations of student improvement based upon the individual ability and achievement levels that they bring to the testing situation each year.

We can set standards for the improvement of all students. This can be accomplished by tracking and analyzing our data over time, and determining if there is really any relationship between what we are assessing in regard to student proficiencies on the skills (ISTEP+) part of the test compared to achievement test results (***Terra Nova***). Below are the essential skills in both Language Arts and Mathematics by grade level that are tested by ISTEP+.

**ISTEP+ English/Language Arts Proficiencies by Grade Level**

| 3rd Proficiencies: | 6th Proficiencies: | 8th Proficiencies: | 10th Proficiencies: |
|---|---|---|---|
| 1. Construct/Meaning | 1. Construct/Meaning | 1. Construct/Meaning | 1. Construct/Meaning |
| 2. Elaborate | 2. Compare/Predict | 2. Compare/Predict | 2. Compare/Predict |
| 3a. Writing Dev | 3. Textual Clues | 3. Textual Clues | 3. Textual Clues |
| 3b. Lang-in-Use | 4a. Writing Dev | 4a. Writing Dev | 6a. Writing Dev |
| 4. Punct/Capitalize | 4b. Lang-in-Use | 4b. Lang-in-Use | 6b. Lang-in-Use |
| 5. Usage | 5. Punct/Capitalize | 5. Punct/Capitalize | 7. Punct/Capitalize |
| 6. Categorize | 6. Usage | 6. Usage | 8. Usage |
| 7. Make Predictions | 7. Spelling | 7. Spelling | 9. Spelling |
| 8. Literal Meaning | 9. Make Inferences | 8. Make Inferences | 10. Revise Writ Text |
| 9. Signs/Symbols | 10. Cause/Effect | 9. Cause/Effect | 11. Make Inferences |
| | 11. Fact/Opinion | 10. Fact/Opinion | 12. Cause/Effect |
| | 12. Reality/Fantasy | 11. Purpose/Perspect | 13. Purpose/Perspect |
| | 13. Literal Meaning | 12. Rel/Irrelevant | 14. Compare/Contrast |
| | 15. Story Structure | 13. Compare/Contrast | 15. Influence/Persuade |
| | 16. Struct of Exp | 14. Literal Meaning | 16. Fact/Opinion |
| | | 16. Story Structure | 17. Literal Meaning |
| | | 17. Struct of Exp | 19. Genres/Conv |
| | | 19. Literary Conv | |

**ISTEP+ Mathematics Proficiencies by Grade Level**

| 3rd Proficiencies: | 6th Proficiencies: | 8th Proficiencies: | 10th Proficiencies: |
|---|---|---|---|
| 1. Problem Solving | 1. Problem Solving | 1. Problem Solving | 1. Problem Solving |
| 2. Reasoning | 2. Reasoning | 2. Reasoning | 2. Reasoning |
| 4. Whole Number | 4. Place Value | 4. Place Value | 4. Algebra |
| 5. Place Value | 5. Real Num Sense | 5. Real Num Sense | 5. Functions |
| 6. Fractions | 6. Real Num Comp | 6. Real Num Comp | 6. Geometry |
| 7. Estimation | 7. Estimation | 7. Estimation | 7. Statistics |
| 8. Geometry | 8. Geometry | 8. Geometry | 8. Probability |
| 9. Spatial Sense | 9. Measurement | 9. Measurement | 9. Computation |
| 10. Measurement | 10. Statistics | 10. Statistics | |
| 11. Probability | 11. Probability | 11. Probability | |
| | 12. Algebra | 12. Algebra | |
| | | 13. Ratios | |

Next, we need to establish a relationship between ability testing, achievement testing, and essential skill testing for both the ISTEP+ test and CTB McGraw-Hill ***Terra Nova***, which can be



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used in the years when state testing is not required. If ISTEP+ Proficiencies cannot be related to CTB McGraw-Hill Performance Objectives or they not help clarify student improvement over time, then how do we justify annual testing with different test versions. The following are the performance objectives for the CTB McGraw-Hill ***Terra Nova*** in Reading, Language, and Mathematics.

***Terra Nova*, CTB McGraw Performance Objectives**

**Objectives:**

| **Reading** | **Language** | **Mathematics** |
|---|---|---|
| 02 Basic Understanding | 07 Sentence Structure | 10 Number & Num Relations |
| 03 Analyze Test | 08 Writing Strategies | 11 Computation & Estimation |
| 05 Identify Rdg Strategies | 09 Editing Skills | 12 Operation Concepts |
| | | 13 Measurement |
| | | 14 Geometry & Spatial |
| | | 15 Data, Stats & Prob |
| | | 17 Prob Solving & Reason |
| | | 18 Communication |

In the past it has almost been impossible to determine the relationship between the two types of test data because we did not have a method to desegregate the data and compare student results from one year to the next. With the new CTB McGraw-Hill test analysis software, we should be able to do this in the future. During the ISTEP+ testing period, Indiana students spend approximately eleven hours in testing; they spend about two hours less in the off - year. If we cannot establish the relationship between the data from the two testings from one year to the next with some level of predictive ability, then it is difficult to justify taking this time away from instruction. In addition to being able to compare test results over time, we have to establish performance expectations that will guarantee that all students will improve.

## Performance Expectations

David Thornburg (1997) states that "our educational institutions must prepare students for their future not our past." We should apply this statement to the setting of high school graduation standards. In Indiana since the setting of 10th grade high school graduation test standards, there has been a great deal of debate about whether those standards are too high or too low. If we



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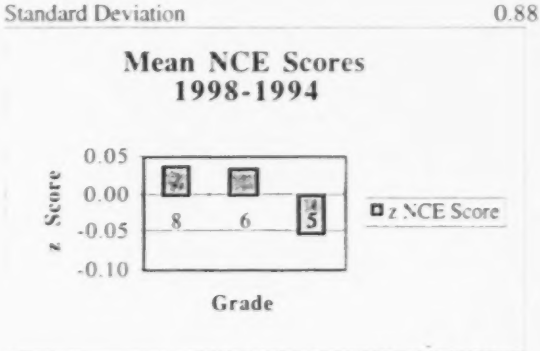
looked at those standards in light of what Thornburg has said and the skills that these students will need in the 21st century, there should be no question or debate that Indiana's performance expectations of 10th grade students are not high enough. Then, how do we guarantee that the standards are high enough? According to Guskey (1997), we need to do this by expecting that student performance will "improve each and every year" as they move through our school districts. Therefore, we must expect that a student at the 95th percentile will improve, just as we expect a student at the 5th percentile to improve.

We are using the North Central Association Transition and Outcomes Endorsement models to develop a plan in Noblesville Schools to accomplish this purpose of setting performance expectations and documenting improvement for students from one school year to the next. We will illustrate how this model works in the three areas which are of greatest public concern and interest in Indiana - - National Percentile Results, Language Arts Proficiencies, and Mathematics Proficiencies.

The National percentile results can be compared both with ISTEP+ results and the off year testing on the ***Terra Nova***. Although the norms and versions of the test have changed over the years, we still can take the results of our 8th grade students and analyze how this group has been doing as students in our school district. By using the first year that they took the test as the baseline and using a simple z score, we can see that student performance has changed from one year to the next as is shown in the table and graph to the right.

**CBT McGraw-Hill Mean NCE Scores:**

| Year | Grade | z NCE Score | NCE Score |
|---|---|---|---|
| 1998 | 8 | 0.04 | 65.3 |
| 1996 | 6 | 0.03 | 65.2 |
| 1995 | 5 | -0.05 | 63.4 |
| 1994 | 4 | | 64.5 |
| Standard Deviation | | | 0.88 |





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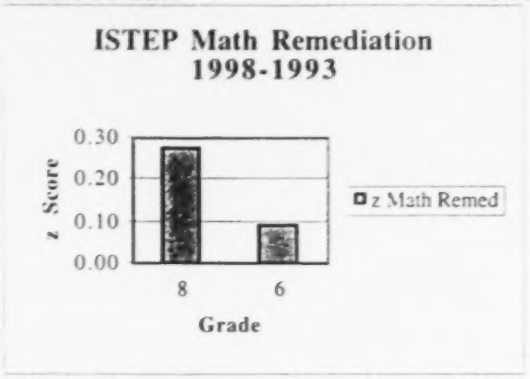
Although we could do the same thing for both Language Arts and Mathematics Proficiency Test results, we will show only the results for Mathematics. The Proficiency Test results are available only at grades 3 and 6, and there has not been more than two years from which the proficiencies have stayed the same. However, using the Proficiency Test results for grades 3 and 6 starting with 1993 for baseline data we show an improvement in student performance.

**ISTEP+ Math Remediation**

| Year | Grade | z Math Remed | Percent Pass |
|---|---|---|---|
| 1998 | 8 | 0.28 | 84 |
| 1996 | 6 | 0.09 | 80 |
| 1993 | 3 | | 78 |
| Standard Deviation | | | 3.06 |




We think that the model presented above will address the issues of how we can show improvement and set expectations that all students will improve. The final step in this process is to determine how we explain this in a manner which will accepted and understood by staff, students, parents, and community.

## Changing Expectations and Performance

The 1997 IASCD Fall Conference reinforced how our different publics use student performance data. First, the media wants to rank order the data because it is the easiest way to compare how students in one school or school district scores in relation to others. Second, politically our Department of Education does not believe that it can set expectations for student performance without making adjustments for variations in ability and socio-economics. Third, business wants workers that have the skills that will meet the demands of the 21st century. Fourth, students and parents are interested in knowing how students are doing in relationship to others. Fifth, educators should be interested in comparing whether individual students are improving.



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To prepare our students for the 21st century, we need to have standards that move away from rank ordering test results and establish improvement standards for all students. Unfortunately for Indiana, we have paid little attention and have been unwilling to become involved with efforts like the 1996 Educational Summit in Palisades, New York, which was held in conjunction with chief executive officers of businesses in the United States and the National Governor's Association. This and similar efforts have attempted to develop 21st century work standards.

It comes back to the statement by David Thornburg (1997) that student standards or expectations must be for "their future not our past." If this becomes the goal, then we will have to get beyond rank ordering in setting standards, and the most important question is not whether my students or your students are better, but are <u>all</u> students improving? This does not mean that we should not have minimum expectations, but it does mean that we should not be satisfied with minimum expectations. We should expect improvement whether students are at the 5th percentile or the 95th percentile in performance. Only by doing this will Indiana have adequate 21st century student performance standards.

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